

Appendix D

Draft Framework for Development of Compensatory Mitigation Plans for Biological Resources

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BUREAU OF LAND MANAGEMENT

Boardman to Hemingway 500 kV Transmission Line Project

Framework for Development of Compensatory Mitigation Plans

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I. INTRODUCTION

Idaho Power Company (IPC) is proposing to construct and operate approximately 305 miles of new transmission line known as the Boardman to Hemingway Transmission Line Project (Project or B2H Project). The Project is a 500-kilovolt (kV) single-circuit line and a rebuild of existing 138-kV and 69-kV double-circuit lines between Boardman, Oregon, and the Hemingway Substation, which is located approximately 30 miles southwest of Boise, Idaho.

The Project requires approvals from both federal and state agencies. Accordingly, IPC has submitted applications to the Bureau of Land Management (BLM), U.S. Forest Service (USFS), Bonneville Power Administration (BPA) and the Bureau of Reclamation (hereafter decision making agencies) to obtain authorization to cross lands managed by those agencies.

The decision making agencies may require mitigation measures and conservation actions in order to achieve land use plan goals and objectives and provide for sustained yield of natural resources on public lands, while continuing to honor the agencies multiple-use missions. The sequence of mitigation action will be the mitigation hierarchy (avoid, minimize, rectify, reduce or eliminate over time, compensate), as identified by the White House Council on Environmental Quality (CEQ) (40 CFR 1508.20) and the BLM *Draft - Regional Mitigation Manual Section (MS) -1794*. Certain alternatives may also identify compensatory mitigation requirements for activities whose impacts the agencies cannot adequately avoid, minimize, rectify, reduce or eliminate over time (i.e., residual impacts).

Overall, Project mitigation should adhere to protocols, policies, and rules that are considered standard for mitigation frameworks already in place for other regulated habitats and resources. In general, the Project should be designed, sited, and implemented to adhere to the following mitigation hierarchy:

1. *Avoidance*: measures taken to avoid creating impacts from the outset, such as careful spatial or temporal placement of elements of infrastructure, in order to completely avoid impacts on certain components of biodiversity and prevent damage to ecosystem services.
2. *Minimization*: measures taken to reduce the duration, timing, intensity and/or extent of impacts (including direct, indirect and cumulative impacts, as appropriate) that cannot be completely avoided, as far as is practically feasible.
3. *Rehabilitation/Restoration/Rectification*: measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and/or minimized.
4. *Offset (also referred to as Compensatory Mitigation)*: measures taken to compensate for any residual significant, adverse impacts that cannot be avoided, minimized and/or rehabilitated or restored, in order to achieve no net loss or a net gain of biodiversity and ecosystem services. Compensatory mitigation can include the restoration of degraded habitats, improvement of marginal habitats, creation of new habitats, protection of threatened habitats, or a combination thereof.

Linear projects such as transmission lines can result in loss, degradation, and fragmentation of essential fish and wildlife habitat. This Framework recognizes that these direct and indirect effects may be greater than the absolute acreage of total habitat lost, depending on the quality, location, and landscape structure (i.e., composition and configuration) of the lost habitat. Loss of breeding (e.g., nesting, parturition), foraging, and protective (e.g., roosting, loafing), connective (e.g., dispersal), and other essential habitats may cause direct and indirect impacts to species by:

- Reducing current species occupancy and productivity.

- Limiting the capability of impacted or adjacent lands to support future species occupancy and reproduction.
- Reducing the ability of the impacted or adjacent areas to support current or future foraging, protection, and movement of fish and wildlife species.

Collectively, impairment of these functions could reduce existing conditions and limit future improvements to demographic, physical, and genetic connectivity; occupancy, or reproduction; all of which are important to the conservation of fish and wildlife species.

The priority is to mitigate impacts at the site of the activity in conformance with the land use plan goals and objectives, through impact avoidance, minimization, rectification, and reduction over time of the impact, including those measures described in laws, regulations, policies, and the land use plans. When these types of mitigation measures are not sufficient to ameliorate anticipated direct, indirect and cumulative impacts and substantial or significant residual impacts remain, additional measures to reduce these residual impacts to meet applicable land use plan goals and objectives will be required (Compensatory Mitigation).

With the above in mind, this Framework assumes a well-defined proposed action has been developed for the Project, including a complete description of the spatial and/or temporal placement of Project elements during the Project life. The Framework also assumes the proposed action has been developed in a manner commensurate with the goals of avoiding or minimizing disturbance or disruption of individual fish and wildlife species, and removal and/or degradation of their habitat. Specifically, this Framework assumes that final siting of the transmission line will include all reasonable efforts to avoid habitat removal, other indirect effects related to habitat removal, and disruption/disturbance-related impacts to fish and wildlife species and their habitat.

IPC has considered avoidance of sensitive resources a priority throughout the siting process, as explained in detail in the Project's Siting Study (IPC 2010) and 2012 Siting Study Supplement (IPC 2012). Detailed information regarding the methods and measures in which impacts to biological resources have or will be avoided, minimized, and rehabilitated/restored are presented in detail in Sections 3.2.3 Vegetation, Section 3.2.4 Wildlife Resources, Section 3.2.5 Fish, and associated Appendices in the B2H Environmental Impact Statement (EIS). Additional specific measures that will be employed to avoid, minimize, and rehabilitate/restore impacts to fish and wildlife species and their habitats is contained in the Species Conservation Strategy (*in preparation*; Appendix TBD).

As described above and within the referenced sections and appendices found in the B2H EIS, a variety of measures consistent with the first three components of the mitigation hierarchy (i.e., avoid, minimize, and rehabilitate/restore) have been or will be used to mitigate initial Project impacts. Therefore, the remainder of this document is focused on the last component of the mitigation hierarchy: Offset or Compensatory Mitigation.

This Framework for the development of Compensatory Mitigation Plans (Framework) describes the methods for assessing and offsetting significant residual adverse impacts to biological resources due to the construction, operation, and maintenance of the B2H Project. The Framework provides guidance for impact assessment methodologies, mitigation Principles and Standards, and mitigation amounts, actions, and selection criteria. This Framework has been collaboratively developed by project cooperators (see Appendix A) The Framework's foundational Principles and Standards follow the EIS impact analysis and offer a basis from which mitigation can be assessed and successful mitigation opportunities can be implemented.

IPC has stated that they intend to prepare at least two CMPs to address impacts to terrestrial and aquatic species and their habitats (Table 1). Through the development of the required CMPs, methods that are slightly different than those described in this Framework may be determined to be necessary and desirable. However, at no time should such modifications result in significant deviations from the

applicable statutes, regulations, and policies that provide for the conservation and management of fish and wildlife species and their habitats described in detail in Section 3.2.4.2 Regulatory Framework in the B2H EIS.

Table 1. Compensatory mitigation plans and the primary¹ affected species and habitats they intend to address.

Compensatory Mitigation Plan (CMP)	Species and Habitats
Habitat Mitigation Plan	<ul style="list-style-type: none">• Howell's spectacular thelypoda• Washington ground squirrel• Greater sage-grouse• "Essential" terrestrial wildlife habitats²
Wetlands Mitigation Plan	<ul style="list-style-type: none">• Bull trout• Middle Columbia River Steelhead• Snake River Basin Steelhead• Snake River Chinook• Essential Fish Habitat• Wetlands and riparian habitats

II. GENERAL MITIGATION PRINCIPLES AND STANDARDS

The following Principles and Standards, as well as the remainder of this Framework, will inform the development of CMPs required to offset significant residual impacts of the Project. These Principles and Standards form the context in which the decision making agencies will evaluate the Project impact assessments and mitigation proposals for biological resources. Project impact assessments and mitigation plans that substantially deviate from these Principles and Standards, or from the more specific descriptions of impact assessment and mitigation provided in latter sections of this document, may not be adequate or supportable by the decision making agencies. These Principles and Standards serve as guidance for:

- Determining the types and amounts of Project impacts and expected mitigation.
- Evaluating the proposed Compensatory Mitigation Plans for the Project.
- Selecting any additional habitat restoration, enhancement, protection and other management actions necessary to adequately mitigate the Project's significant residual impacts.

The Principles and Standards that should guide the development of compensatory mitigation plans prepared for the Project include the following:

A. Landscape Planning

A mitigation program should be developed in conjunction with, or guided by, a landscape-level conservation plan to ensure the viability of species and the ecosystems upon which they depend on over time.

¹ Depending on the outcome of the impacts analysis, other biological resources may qualify for compensatory mitigation.

² Oregon Administrative Rule 635-415-005 defines Essential Habitat as "any habitat condition or set of habitat conditions which, if diminished in quality or quantity, would result in depletion of a fish or wildlife species". For the purpose of this Framework, Oregon Department of Fish and Wildlife's Habitat Categories 1, 2, and 3. are considered essential wildlife habitats.

B. Species Benefit

Overall outcomes including mitigation should result in *net benefit* to species at the population or landscape scale.

C. Compensatory Mitigation Action Types

Compensatory mitigation actions can occur in the form of the following types:

- *in-kind*: involving replacement or substitution of resources that result in similar habitat structure and function that benefit the same species as those being impacted;
- *out-of-kind*: involving replacement or substitution of resources that result in different habitat structure and function that may benefit the species other than those existing at the site prior to disturbance;
- *in proximity*: means habitat mitigation measures undertaken within the home range or watershed (4th field HUC) of populations or areas affected by a development action that is most likely to provide the greatest benefit;
- *off-site*: involving mitigation actions outside the boundary of or area impacted by the project;
- *mitigation bank*: means habitat that is restored, created, or enhanced for the purpose of selling habitat credits in exchange for anticipated unavoidable future habitat losses due to development actions; and
- *in-lieu fee*: program means proponents pay a third party to provide mitigation to compensate for project impacts.

D. Governance

A compensatory mitigation program requires a broad array of functions to operate. A program administrator (or panel of administrators) should be selected and granted enforcing authority for the establishment, operation, and management of compensatory mitigation actions. The administrator must have the ability to reconcile any funding, perform or enforce management actions, incorporate adaptive management, track credits, report results, etc.

The program administrator should be recognized by the state through a formal agreement to facilitate enforcement of the requirements of the compensatory mitigation program. Agreements should also be developed with major cooperators, including land managers (e.g., BLM, USFS, ODFW), and with USFWS if regulatory predictability is sought. A legally binding credit agreement should be in place between any party generating credits and the program administrator, and credit agreements should outline and demonstrate the durability of a mitigation program.

The amount of financing provided to deliver the entire mitigation action (interim and perpetual actions) should be determined by an appropriate cost-analysis such as a Property Analysis Record (PAR) or equivalent method.

The source(s) of financing adequacy³ for the interim and perpetual/long-term operation, management, monitoring and documentation associated with the mitigation should be identified and secured. All funds should be held in dedicated accounts and managed based on agreed-to terms to assure that target ecological conditions will be attained and maintained as necessary. When funds are due,

³ Adequacy is defined as funding necessary to carryout agreed to offset actions and perpetual/long-term operation, management, monitoring, remedial actions, permitting, planning and reporting.

management terms will be determined by the state and federal permitting processes and any third-party (e.g., mitigation bank, in-lieu fee) agreement conditions.

E. Service Areas (Location)

Compensatory mitigation actions should be sited in locations that have been identified in conservation strategies to most benefit from the types of conservation actions targeted in the mitigation plans. Identifying areas where offsets can be and are best focused is critical to ensuring that unavoidable impacts are adequately offset by mitigation actions.

Larger service areas provide greater flexibility to exchange credits and debits and thus are more commercially viable. Mitigation actions are more likely to be meaningful to species and habitat conservation if they are aggregated. Service areas must be large enough so that they will, either in themselves or in conjunction with adjacent landscape conditions, provide the targeted biological benefits. Mitigation actions that are not readily measured in acres will be evaluated on a case-by-case basis.

Mitigation should not be located in areas directly impacted by the Project, areas already currently realizing management benefits for fish and wildlife species and their habitat or in areas where the success of the actions or maintenance of the required benefits are likely to be obviated over time by incompatible land-uses.

The BLM is taking a regional approach to mitigation with its 2013 draft MS-1794 policy⁴ which focuses on attaining the highest compensatory mitigation benefit, regardless of land ownership. Bundling of credits from multiple debit sources may provide more concentrated landscape level conservation benefits.

F. Conservation Actions and Outcomes (Effectiveness)

Mitigation actions should be measurable and proven to be reasonably likely (both ecologically and economically) to deliver expected conservation benefits. Monitoring and adaptive management are important components to ensure success. Compensatory mitigation programs are encouraged to implement project types and conservation measures that address identified threats. In general, actions that are unproven, have significant lag time before providing conservation benefits, or are economically unachievable, shouldn't be prioritized for compensatory mitigation. *Out of kind* compensatory mitigation may be appropriate where high priority recovery needs can be addressed.

G. Baseline and Additionality

Baseline refers to the habitat and/or species population conditions at any given point in time against which conservation actions are measured to determine ecological uplift, or additionality. Baseline conditions will be based off of the EIS analysis. Baseline conditions should be assessed and measured using the same methodology employed in the EIS to predict future conditions during project planning stages and ultimately to verify project conditions and associated credits during periodic and final monitoring. Consistent methodology for determining baseline conditions at a given site must be applied to predict impacts to fish and wildlife species and their habitats.

Actions proposed as compensatory mitigation must provide benefits beyond those that would already be achieved under other applicable regulations and/or land use management plans. Mitigation actions should result in an improvement to the baseline condition (or ecological uplift) of the lands on which those actions occur, commensurate with the amount and types of impacts (e.g., occupancy, productivity, connectivity, etc.).

⁴http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2013/IM_2013-142.html

Corrective actions applied to existing fish and wildlife management requirements that are not being met, would not be considered additional to normal requirements or management. Merely maintaining existing conditions on proposed mitigation sites, even if such conditions support species needs, does not result in true offsets to Project impacts, as an overall net loss to the species would remain. For this reason, acquisition and protection of a site as the sole conservation action will typically not result in adequate mitigation; additional restoration and enhancement actions will most often be necessary. Some temporal credit consideration may be appropriate for contributions to substantively accelerated management actions on a case-by-case basis where benefits can be quantified.

H. Timeliness, Durability, Ratios, and Reversals

Actions or plans proposed as compensatory mitigation should demonstrate timeliness (i.e., achieve targeted biological conditions in a timeframe that benefits the species or species), biological effectiveness (i.e., ecological durability) and be accompanied by legal and financial assurances that secure and protect the conservation status of the mitigation site and credits for at least as long as associated impacts persist (i.e., protective durability).

Most mitigation frameworks require that actions proposed as mitigation achieve targeted biological conditions in a timeframe commensurate with both the life of the project and the life of the associated biological impacts. Some impacts may persist beyond the operational life of the Project, or there is significant uncertainty as to the persistence of the impacts. Sage-steppe habitat is considered a slow recovery ecological environment due to slow-growth lifecycles of the dominant flora and low precipitation regimes. Therefore:

1. It should be assumed that most Project impacts to sagebrush habitat are long-term or permanent in nature.
2. The benefits derived from proposed mitigation actions in sagebrush habitat must be assumed long-term or permanent in nature.

Because most impacts typically begin to occur in the very early stages of a project (i.e., construction and initial operations), the benefits of the Project's proposed mitigation actions must also begin to accrue as early in the life of the Project as possible; implementation of mitigation actions should be heavily "front-loaded" to facilitate this. Any time lags that will exist between the occurrence of impacts and attainment of benefits, either due to the nature or schedule of the mitigation actions, should be compensated for via additional mitigation (e.g., higher ratios).

The Project's compensatory mitigation plans should include regulatory, financial, and legal mechanisms that assure that each mitigation action's target biological conditions for the impacted species or habitat will be attained and maintained as necessary for a time period commensurate with impacts. Requirements that assure implementation generally preclude consideration of actions that are voluntary, subject to easily changeable land use/management regimes, or not accompanied by secured finances. The most critical issues regarding assurances of implementation are related to: retention of habitat conditions achieved through mitigation for a time period commensurate with impacts; and securing funding in amounts sufficient for establishment and long-term management and monitoring of the mitigation actions. Therefore, on non-federal land, assurances of appropriate management should be provided, preferably through acquisition of permanent conservation easements held by a qualified land protection entity or the project proponent.

Mitigation actions should be proposed within land use designations or classifications that will provide the greatest ecological benefit for the affected fish and/or wildlife species. Mitigation actions proposed within land use area that have other management or uses that would degrade, delay, or otherwise undermine establishment and long-term maintenance of desired sage-grouse conservation should be considered, however mitigation in these areas may receive less credit for impact debits and should be handled on a case-by-case basis. Assurances of appropriate management constraints should

be provided. During interim periods in which agency management plan amendment processes are underway, clear policy guidance documents (e.g., Instructional Memorandum) should be in place to provide these assurances.

Risk and uncertainty associated with durability (i.e., biological effectiveness) can be addressed to a degree with higher credit to debit mitigation ratios; however, the point at which risk and uncertainty render an offset project as unsuitable is determined at the mitigation project level. Strong projected ecological durability should therefore favorably influence mitigation ratios. Lower levels of protective durability would result in higher mitigation ratios or other means to address uncertainty. For example, higher mitigation ratios may be warranted if the success of compensatory mitigation has not been verified prior to impacts occurring or if a time lag will exist from when impacts are incurred and offset benefits are realized. In addition, if policy requires that compensatory mitigation occur locally, and local opportunities are limited or do not fit well into a given fish and wildlife conservation strategy, higher mitigation ratios may be used to compensate for spatial deficiencies.

Reversals may be caused by natural disturbances (unintentional reversal, such as wildfire) or anthropogenic disturbances (intentional reversal, such as development) which shorten the intended duration of compensatory mitigation. Requiring the credit provider to be responsible for unintentional reversals would likely make administration of a program more complex and decrease interest in providing credits. Unintentional reversals could be addressed by establishing insurance or reserve pool. Intentional reversals could be addressed by requiring compensation by the party responsible for the reversal. To address this issue up front, the mitigation program should establish policies such that intentional reversals are prohibited to the extent possible, and that conservation benefits from a compensatory mitigation project are not diminished due to replacements made necessary by unforeseen intentional reversals.

I. Land Ownership/Management

Compensatory mitigation can occur on either private or publicly managed land. Generally, conservation actions used as compensatory mitigation should be limited to those identified as the most critical for the conservation of the affected fish and/or wildlife species affected in the applicable geographic setting and that will yield the most substantial benefit, regardless of ownership. BLM's 2013 draft MS-1794 policy echoes this consideration:

“Mitigation site, projects, and measures should be focused where the impacts of the use authorization can be best mitigated and BLM can achieve the most benefit to its resource and value objectives, regardless of land ownership. The most appropriate area for mitigation projects may be on Federal lands (the BLM or another agency) or on non-Federal lands.”

Actions proposed as mitigation on public lands should not serve as the primary or dominant means of compensating for the Project's impacts on private lands. To the extent actions on public lands are proposed to mitigate for Project impacts on public or private lands, the actions should enhance the biological values of the public lands beyond those already provided by the existing public land management program (i.e., additionality) and that are expected to be implemented within a reasonable time frame. In other words, the mitigation value assigned to the proposed management actions should be based only on those biological conditions that are supplemental or additive to conditions that would be derived from existing, planned, or anticipated public programs if they are funded.

However, universal adherence to the above constraints may not be practicable or advisable when: 1) appropriate mitigation opportunities on private lands are not available; 2) land management policies require that impacts incurred on public lands are also mitigated on public lands; and 3) while some biological conditions associated with proposed mitigation on public lands would otherwise be

provided through planned or required public programs, actual attainment of the desired conditions is unlikely because of funding constraints or other obstacles⁵.

Criteria related to additionality and durability present challenges with use of public lands. Land exchanges and consolidation of ownership or management of land may overcome some of these challenges.

For public lands, if the biological values expected to result from public programs are the same as those required for compensatory mitigation, those lands may not meet the additionality test. Durability on public lands may be difficult to guarantee because of rules and policies (e.g., FLPMA) that preclude many legal land protection mechanisms that can assure protection and management commensurate with the life of project impacts. Use of public lands for compensatory mitigation purposes could also limit attainment of broader goals for fish and wildlife conservation, specifically those related to providing economic benefits to landowners and increasing incentives for private landowners to engage in conservation actions.

To show that compensatory mitigation projects will persist, the agency responsible for oversight of public lands on which the mitigation occurs should be responsible for providing alternative adequate mitigation if subsequent changes in management direction result in incompatible uses on those lands. This contingency responsibility should be identified in the administrative and regulatory documents (e.g., Records of Decision) that enable the original mitigation.

Compensatory mitigation programs clearly define how additionality and durability will be addressed on various land ownership types. Close coordination with BLM and USFS will be necessary so that BLM regional mitigation strategies and state, local, and Tribal mitigation plans align.

J. Metrics and Accounting

The methodologies, or metrics, used to determine the expected impacts of actions (debits) and the measures necessary to avoid, minimize, restore and/or offset those impacts (credits) must be based solely on biological conditions and upon reliable and repeatable methods and result in a common “currency” between credits and debits. The methodology for determining the metrics should follow the EIS analysis where applicable. Further refinement of credits (mitigation) and debits (impacts) may be proposed in the compensatory mitigation plans by the proponent if they so choose. Final approval will be determined by the decision making agencies.

A formal, consistent, rigorous but relatively simple methodology⁶ to assess impacts should be used and applied to all land development activities that impact fish and wildlife and their habitats. The methodology should address direct impacts (habitat removal), indirect impacts and disturbance, and ecological site conditions. Metrics that are comparable or the same across jurisdictional boundaries will allow for more biologically meaningful exchanges in a landscape context. Approaches such as sound propagation, distance-based disturbance bands, habitat weighting, and ratios are acceptable, especially in conjunction with defined thresholds of allowable impact in defined geographies.

Credits must be reasonably likely to deliver expected conservation benefits (see *Durability*, above). Phased credit releases should be provided based on both ecological and administrative performance. Mitigation requiring large commitments may also be considered for greater credit values and potential future credits related to similar impacts. Monitoring and adaptive management are important

⁵For example, in the subsequent CMPs the proponent may propose funding actions identified in land management plans that do not have, and are not expected to have, funding within a reasonable time as mitigation options.

⁶ Refer to *Measuring Up* document submitted to USDA for examples of developing robust metrics: <http://willamettepartnership.org/measuring-up/Measuring%20Up%20w%20appendices%20final.pdf>

components of mitigation programs to ensure success. Ultimately, the metrics used must tie back to populations and clearly show the conservation benefit to the affected species.

Mitigation ratios may be used to address uncertainty in the program and ensure durability. Ratios may be determined based on several factors including temporal considerations (impact versus mitigation timing), functional quality and importance of proposed impacted areas, projected functional quality of proposed mitigation areas, likelihood of restoration success, degree of threat to proposed preservation areas, durability, etc.

A robust compensatory mitigation program will provide an accounting system⁷ whereby credits and debits can be tracked. The accounting system should foster transparency, accountability, and credibility and facilitate the connections between compensatory mitigation providers at the lowest transaction costs.

K. Types of Compensatory Mitigation Programs

Compensatory mitigation is to be considered after all avoidance and minimization measures have been explored. Any compensatory mitigation program is best developed with the following overarching philosophies:

1. Strive to achieve net positive conservation
2. Simplify and streamline project approval processes
3. Use existing state or local processes
4. Make fish and wildlife species and their habitat an asset, not a liability
5. Use the best science
6. Be consistent and fair

Following the compensatory mitigation action types described above (Section II, C), the types of programs eligible as compensatory mitigation may consist of one or a combination of the following three basic types:

1. Permittee-responsible mitigation

In a Permittee-Responsible Mitigation Program, all of the actions required to meet the compensatory mitigation obligations are undertaken by the entities seeking a permit to impact a regulated natural resource or an authorized agent or contractor working on their behalf. In this type of program, the permittee retains full responsibility for meeting all of the terms of the permit they receive.

2. In-Lieu Fee Program

In an In-Lieu Fee Mitigation Program, entities seeking a permit to impact a regulated natural resource pay an In-lieu fee mitigation program administrator or sponsor to fulfill their obligation to provide compensatory mitigation (sometimes referred to as “debts”) associated with their project. Under the Clean Water Act, governmental and non-profit natural resources management entities are authorized to administer in-lieu fee programs. The operation and use of an in-lieu fee program is governed by an in-lieu fee program instrument (agreement). Once the landowner has paid the required fees, the administrator has the obligation to invest the funds in actions (i.e., restoration, establishment, enhancement, and/or preservation) under the terms of the program instrument.

⁷ See Willamette Partnership’s *General Crediting Protocol* for an example of an ecosystem credit accounting system.

3. *Habitat Credit Trading Program*

Habitat Credit Trading Mitigation Programs or “marketplace programs” connect entities seeking a permit (permittee) to impact a regulated natural resource with those interested in committing to fulfill some or all of the permittee’s compensatory mitigation obligations. As in an In Lieu Program, a permittee makes a payment(s) or purchases ‘credits’ to meet their compensatory mitigation requirements.

Under all three types of programs, compensatory mitigation can be bundled into larger offset projects or “banks”. Mitigation or conservation “banks” are sites, or suite of sites, where natural resources are restored, established, enhanced, and/or preserved for the purpose of providing compensatory mitigation for impacts to similar resources authorized by federal or state permits. Mitigation “bankers” are required to enter into a legal agreement with the regulatory agency based on a set of actions they will take on a given tract of land. The regulatory agency determines how many “credits” the activities will generate and sets conditions the banker must meet in order to sell the credits to offset adverse but authorized impacts (debits). The obligation to fulfill the compensatory offset obligations then transfers to the mitigation banker.

III. IMPACT ASSESSMENT

The impact analysis and associated mitigation development focuses on significant residual adverse effects that could occur as a result of the construction, operation and maintenance of the Project. As discussed previously, Project effects should be avoided and minimized to the extent practicable, documented in a comprehensive effects analysis, and be adequately offset in Project mitigation activities. Even following the application of standard avoidance and minimization measures to siting, construction, operation and other Project Design Features, significant residual adverse impacts to some fish and wildlife species and their habitats may remain.

This Framework is premised on the fact that direct (e.g., loss, degradation, or fragmentation) and indirect effects to breeding, foraging, protective, connective, or other essential habitats of ESA listed, proposed, and candidate species, special status species, and other species of economic value or conservation concern (e.g., migratory birds, big game) can be reasonably expected, over the life of the Project’s impacts, to affect occupancy, potential occupancy, and short- and long-term habitat connectivity, and therefore should be considered a significant adverse effect. Direct and indirect effects to essential habitats of other species with special management emphasis (e.g., special status species, big game) may also result in and be considered significant residual adverse effects. Significant residual impacts due to the Project may affect the following biological resources:

- ESA listed, Proposed, and Candidate Species and their habitat
- Special Status Species and their habitat
- Migratory Birds and their habitat
- Species of economic value or conservation concern
- Essential and limited vegetation communities/geomorphic features
- Ponds, lakes, streams, and riparian and wetland areas

Significant residual adverse effects to these biological resources will need to be mitigated through additional conservation actions. Efforts to compensate for the effects on these species and their habitats will likely need to focus on offsetting them through habitat acquisition, restoration, enhancement, and protection actions that support occupancy, productivity, and habitat connectivity.

Impacts may occur directly via habitat loss through surface disturbance and mortality from construction activities or collision, or indirectly through the reduction in habitat quality or increased predation due to the addition of enhanced hunting opportunities associated with transmission structures.

The assessment of impacts is based on the methods used and analysis completed in the EIS Chapter 3. In addition, supplemental methods to assess impacts to sage-grouse and their habitat are provided in detail in Appendix E of the EIS. For the purpose of this Framework, impacts requiring compensatory mitigation (i.e., significant residual adverse effects) are those residual impacts determined to be High in the EIS impacts analysis. Landscape and project-level impacts used to analyze and define high residual project-related impacts are presented in EIS Chapter 3.

IV. MITIGATION

The mitigation guidance presented in this section is based upon the impact analyses presented in Section III, and the General Mitigation Principles and Standards as presented in Section II of this document. Collectively, these provide the underlying framework for determining the types and amounts of mitigation necessary to address significant residual adverse impacts to fish and wildlife species. They will assist in evaluating the extent to which actions in the future CMPs may address mitigation needs for these species and, if necessary, to develop and select additional mitigation actions to offset Project impacts to fish and wildlife species and their habitats.

Determining Appropriate Mitigation Actions and Service Areas

Mitigation Actions

The Final CMPs will identify specific mitigation actions and sites. The Preliminary and Final CMPs will demonstrate that mitigation actions are:

1. Available and on a scale that is ecologically and economically meaningful to conservation;
2. Reasonably certain to be initiated within the time frames established through the federal and state permitting processes; and
3. Mutually agreed upon by Project proponents and agencies.

While the suite of mitigation in the Final CMP's is expected to be based on the identification of mitigation actions and service areas, it may not necessarily include them in their entirety (e.g., certain mitigation may occur outside the identified service areas if mutually agreed upon between the Project proponent and the agencies).

Mitigation actions that will be undertaken in the service area(s) (below) will be designed to:

1. Enhance the baseline condition of the habitat within the service area commensurate with the types and amounts of adverse effects identified in the impact assessment and to attain "net benefit";
2. Protect and maintain the habitat and other ecological attributes required for mitigation within the service area for the life of the Project or the Project's impacts, whichever is greater; and
3. Enhance broader areas for impacted fish and wildlife species.

In selecting mitigation actions, the following are examples of allowable mitigation that can be considered. These mitigation actions follow the standard mitigation hierarchy and would be consistent with current regulatory policies and guidelines:

1. Actions that address habitat-related factors that may be limiting population growth and sustainability of fish and wildlife species in the area will be given a higher priority;

2. Actions to improve habitat quality (not in order of preference), such as:
 - a. Preserve essential habitats through acquisition and easements.
 - b. General improvement of habitat condition through revegetation efforts, particularly in habitats that appear to be limiting for affected fish and wildlife populations.
 - c. Re-engineering, removal, or marking of anthropogenic structures, particularly in habitats that appear to be limiting for affected fish and wildlife populations.
 - d. Control human access that compromises habitat effectiveness.
 - e. Eradicate or reduce existing invasive weeds.
 - f. Reestablishment of native vegetation communities in wildfire areas.
 - g. Implementation of grazing management techniques that could improve habitat conditions on private lands.
 - h. Juniper removal, preferentially treating Phase 1 and 2 over Phase 3.
 - i. Maintain the habitat and other attributes, through monitoring and adaptive management, required for mitigation after the improvements have been attained and for the duration required to meet success criteria specified in the CMP and/or permit authorizations.
 - j. Prevent or minimize invasive weed establishment.
 - k. Provide buffers around essential habitats to minimize or reduce threats.
 - l. Reduce risk of wildfire through an appropriate combination of fuel break placement in cooperation with the land-managing agency, and invasive species reduction.
 - m. Re-establish or improve habitat connectivity (e.g., restore sagebrush, increase patch size and/or connectivity, etc.).

Service Areas

Mitigation actions should be located where efforts have the greatest likelihood of producing the required benefits. The following general guidance describes what criteria the CMPs should use to identify potential mitigation action site(s) within the regional service areas.

1. Service areas and mitigation actions will result in improved habitat conditions for the life of the Project effects (i.e., for the life of the transmission line and access roads and any additional time to recover the impacted habitat to pre-disturbance habitat quality conditions).
2. Service areas that:
 - a. can be geographically consolidated into a contiguous parcel at a landscape level are preferred to isolated parcels;
 - b. can be managed for impacted fish and wildlife species over the long-term; and,
 - c. have a reasonable probability of attaining and maintaining the CMP objectives are preferred.
3. Service areas that are proposed on private lands will only be pursued if the landowner is willing to sell or enter into a conservation easement. This Framework does not set or dictate the price the Proponent will pay for conservation easements or land purchases and the Proponent will not be expected to use eminent domain to acquire property.

4. Service areas and mitigation actions should address habitat factors that may be limiting fish and wildlife species use and population growth in the area.
5. Service areas and mitigation actions should provide new contribution to conservation and/or habitat quality and/or quantity relative to the existing conservation and/or habitat value, and consider the time lag to the conservation maturity of selected actions (i.e., a shorter time to provide habitat is preferred over a longer-time frame). This is evaluated as the length of time for a mitigation action to deliver conservation at a maturity level (or ecological state) similar to what was lost at the impact site.
6. Service areas shall not occur in any location directly impacted by the Project or in areas where the success of the actions or maintenance of the required benefits are likely to be obviated over time by incompatible land-uses.

V. CALCULATION OF THE AMOUNT OF MITIGATION

The amount of impact and associated mitigation will be measured as described below based on existing habitat condition and habitat potential. Landscape and project-level methods for analyzing and defining unavoidable project-related direct and indirect impacts (debits) include direct habitat loss, loss due to habitat fragmentation, loss due to habitat avoidance, loss due to direct or increased mortality, and loss due to cumulative effects.

The impact assessments pertinent to the Project include:

1. Determining Project-related transmission line impacts to biological resources based on “habitat disturbance” weightings and graduated distance bands that are parallel to the transmission line.
2. Determining Project-related road impacts to biological resources from new, improved and/or expanded existing roads based on “distance band” and “habitat disturbance” calculations. Road impacts are further weighted based on whether the Project’s road use is low, moderate, or high traffic volume; and
3. Determining Project-related impacts due to direct or increased mortality of biological resources caused by collisions or enhanced predation.

The resulting calculations will identify habitat that is impacted by the Project. Impacts shall be identified by BLM, USFS, and ODFW habitat classifications. When distance bands for roads and transmission lines overlap, impacts will not be “double-counted”. In other words, only new or expanded existing roads outside of the buffer used to calculate impacts from the transmission line will be assessed for impacts.

An evaluation of “ecological site data and current vegetation condition” will be required to account for habitat quality. The Project’s ecological site data assessment methodology will result in a calculation of the amounts and types of specific habitat attributes adversely affected within the overall Project impact area. This is necessary to ensure that mitigation results in enhancement actions that achieve net benefits commensurate with the type and amounts of Project impacts. Specific mitigation areas and management actions can then be selected to most effectively achieve enhancements commensurate with Project impacts.

Categorizing Impacts

Essential fish and wildlife habitat in the context of this document include the following categories derived from the State of Oregon Fish and Wildlife Habitat Mitigation Policy⁸ and supporting guidance documents⁹:

- Habitat Category 1: irreplaceable, essential habitat for a fish or wildlife species, population, or a unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population or unique assemblage.
- Habitat Category 2: Essential habitat for a fish and wildlife species, population, or a unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population or unique assemblage.
- Habitat Category 3: Essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population.

Essential plant, fish, and wildlife habitats and vegetation communities and their corresponding Mitigation Habitat Categories will be used to delineate mitigation calculations (Table 2).

Table 2. Mitigation habitat categories for essential Fish and Wildlife Habitats and Vegetation Communities.

Biological Resources Affected	Mitigation Habitat Category Applied
BLM Sage-grouse PPH ^A	Category 1 (unless re-categorized by ODFW as Category 2) ^B
Washington Ground Squirrel (WAGS) Habitat	Category 1 (785-foot buffer around the outside of the cluster of holes where WAGS are residing) ^C Category 2 (4,921 feet extending beyond the Category 1 buffer in continuous habitat) ^D
BLM Sage-grouse PGH ^E	Category 2
Ponds, lakes, streams, and riparian and wetland areas	Category 2
Mule Deer and Elk Winter Range ^F	Category 2
Elk Summer Range Mule Deer Summer Range	Category 3
USFS Forest Stand Data, diameter at breast height (dbh) >= 21 inches	Category 2
USFS Forest Stand Data, dbh >= 9 inches < 21 inches	Category 3
Bare Ground/Climbs/Talus	Category 3

⁸ Oregon Administrative Rule 635-415-005 defines Essential Habitat as “any habitat condition or set of habitat conditions which, if diminished in quality or quantity, would result in depletion of a fish or wildlife species”. For the purpose of this Framework, ODFW’s Habitat Categories 1, 2, and 3 are considered essential wildlife habitats.

⁹ These include but are not limited to *Recommendations for greater sage-grouse habitat classification under Oregon Department of Fish and Wildlife’s Fish and Wildlife Habitat Mitigation Policy* (ODFW 2009) and *Implementing habitat mitigation for greater sage-grouse under the core area approach* (ODFW 2012).

Biological Resources Affected	Mitigation Habitat Category Applied
Native Grasslands	Category 3
Shrub steppe with big sagebrush	Category 3
Ponderosa Pine	Category 3
Aspen	Category 3
USFS Forest Stand Data, dbh >= 1 inch < 9 inches	Category 4

^ABLM PPH is equivalent to ODFW Core Areas.

^BODFW met with IPC in November, 2012 to discuss the categorization of sage-grouse Core Area in several locations. The meeting resulted in several portions of Core Area being categorized as Category 2 habitat. This meeting was documented and summarized in the pASC, Exhibit P, Attachment P-9 (IPC 2013).

^CThe 785-foot buffer around the outside of the cluster of holes where WAGS are residing corresponds to a known maximum travel distance of 239 meters as described in Carlson et al. (1980). This distance has been included in other projects, such as the Leaning Juniper II Wind Power Facility (EFSC 2009), as Category 1 habitat because the area within 785 feet of WAGS holes is interpreted by ODFW as “required area for squirrel survival.”

^DThe 4,921-foot buffer corresponds to guidance given by ODFW (Steve Cherry, ODFW, conference call with Matt Cambier, Tetra Tech, December 03, 2012) to extend WAGS Category 2 habitat 1.5km beyond the Category 1 buffer in continuous habitat. This ODFW guidance is based on the 75th percentile for documented dispersal distances of juvenile male WAGS as reported by Klein (2005).

^EWithin Oregon, BLM PGH includes ODFW Low-density Areas.

^FIPC has assigned a Category 2 designation for all impact areas mapped as ODFW Big Game Winter Range (ODFW 2012b) in this document, with the exception of agricultural, introduced upland vegetation/burned areas, and developed/disturbed lands; winter range data from ODFW, USFS, and IDFG.

Metrics and Accounting

Accounting for the impacts of the proposed Project (debit) and the mitigation measures developed to avoid, minimize, restore and/or offset those impacts (credits) is essential to the successful completion of the CMPs prepared by the Project proponent. USFWS recommends “a formal, consistent, rigorous but relatively simple methodology...” to account for debits and credits applied to the proposed activities that impact biological resources. The accounting system required for the proposed Project should foster transparency, accountability, and credibility and facilitate the connections between compensatory mitigation providers.

The accounting system for the proposed Project should assess the debit and credit contribution to:

- no net loss,
- additionality,
- probability of success, and
- time lag to conservation maturity.

Impacted Acres of impacted biological resources will be the common currency used to account for significant residual adverse impacts due to the Project. This currency provides a methodology for tracking debits and credits consistently across jurisdictional boundaries. Credits must be reasonably likely to deliver expected conservation benefits (i.e., durability). The decision making agencies recommends providing phased credit releases based on both ecological and administrative performance.

Monitoring and adaptive management are important components of mitigation programs to ensure success. Ultimately, the metrics used must tie back to populations and clearly show the conservation

benefit to the species. Because different mitigation actions provide different mitigation benefits, a particular mitigation action's credits may not be equivalent to the Project's impact debit. Therefore a standardized process to determine the amount of credits available for each mitigation category includes:

1. Identify mitigation categories
2. Identify credits by category
3. Assess mitigation categories based on mitigation Principles and Standards
4. Define adjustment factor per category
5. Calculate the resulting credits available per mitigation action

Mitigation ratios address uncertainty in the program and ensure durability. Ratios should be based on several factors including temporal considerations (impact versus mitigation timing), functional quality and importance of proposed impacted areas, projected functional quality of proposed mitigation areas, likelihood of restoration success, degree of threat to proposed preservation areas, durability, etc. Habitat disturbance buffers, combined with mitigation ratios, will be used for the purposes of calculating compensatory mitigation for the indirect impacts.

Successful accounting within the CMPs for the proposed Project will be evaluated based on:

1. proper debit (impact) metrics;
2. proper credit (mitigation) metrics; and
3. project compatibility with management guidance from Cooperating Agencies.
4. The proposed Project accounting and metrics must clearly articulate the resulting “no net-loss” and “net-benefit” for biological resources within the CMP accounting programs.

VI. IMPLEMENTATION, MANAGEMENT, AND MONITORING

The preparation of the CMPs by the Project proponent will involve collaboration with the decision making agencies. The following steps are suggested for completing the CMPs:

- CMP kick-off meetings between the Project proponent and the decision making agencies. This meeting should be scheduled soon after the completion of the Framework.
- Approve CMP outlines and methodologies proposed by the Project proponent (likely in the fourth-quarter of 2014).
- Agencies review preliminary CMPs debit and credit calculations from the Project proponent (likely in the first-quarter of 2015).
- Agencies review Draft CMPs (likely in the second-quarter of 2015).
- Agencies review and approve Final CMP (likely in the third-quarter of 2015).

The Framework, developed by the BLM and cooperating agencies, will be used to evaluate the extent to which measures in the CMPs adequately offset significant residual adverse impacts to biological resources and, if necessary, to identify gaps in proposed mitigation offsets. This evaluation and gap identification will then be used to identify any additional mitigation actions that will sufficiently and successfully offset the Project's impacts to biological resources.

The decision making agencies will review each CMP mitigation action to determine whether the action is consistent with Principles and Standards (Section II). If so, that CMP mitigation action

would likely be appropriate to offset a certain quantity of Project adverse impacts to biological resources. Once mitigation ratios have been appropriately applied to all of the Project's habitat-related significant residual adverse impacts and then compared to the mitigation actions in the CMPs, and once all disturbance/disruption-related mitigation measures have been reviewed, the decision making agencies will be able to determine whether additional mitigation measures are needed to fully offset the direct and indirect adverse impacts of the Project-related activities on biological resources.

If the decision making agencies determine the CMPs do not provide enough mitigation to offset the expected significant residual adverse impacts of the Project on biological resources, the decision making agencies will work with the Project proponent to identify, assess and recommend additional mitigation actions that will fully offset the Project's direct and indirect adverse impacts to biological resources.

The draft and final CMPs will identify a schedule and sequence for implementing restoration of temporarily and permanently impacted areas and mitigation site actions. The implementation schedule will identify timeframes for securing mitigation lands and for implementing mitigation actions on those sites.

The final CMPs will identify the timeframes for each mitigation action to attain the full habitat attributes required to offset the Project's impacts. Specific success criteria should be developed that describe habitat attributes. The desired ecological outcomes will be based on the results of the impact assessment and ecological evaluation, both referenced earlier in this document, and on the overall goal of achieving a "net benefit" with mitigation.

The final CMPs will identify an overall management plan for the mitigation actions that details how mitigation areas will be managed and how enhancement actions will be implemented and monitored. The Proponent will be responsible for monitoring whether mitigation and associated management actions are implemented as stated in the CMPs ("implementation monitoring"), and immediately address any inconsistencies. The Proponent will also monitor the response of vegetation to impact site restoration and mitigation site actions, to confirm the targeted ecological outcomes are being achieved ("effectiveness monitoring"). Monitoring will also be used to identify mitigation actions that are not achieving the desired result and remedial actions will be developed and implemented. The final CMPs will include scientifically accepted methods of monitoring habitat and plant, fish, and wildlife species, and a detailed regime for monitoring and assessing attainment of targeted ecological outcomes.

The Proponent will report the monitoring findings and recommendations as required by the state and federal permitting process. The report will describe all habitat mitigation and management actions carried out during the reporting year, and all remedial management work performed in response to monitoring actions. The report will include an evaluation of mitigation success in meeting ecological targets, and a description of the methods used to perform the evaluation.

APPENDIX A: FRAMEWORK CONTRIBUTORS

Bureau of Land Management:

U.S. Forest Service

U.S. Bureau of Reclamation

Bonneville Power Administration

U.S. Fish and Wildlife Service

Oregon Department of Fish and Wildlife

Idaho Department of Fish and Game

Oregon Department of Energy

Idaho Governor's Office of Energy Resources

APPENDIX B: SELECTED REFERENCES

Federal

- Secretarial Order 3330 Improving Mitigation Policies and Practices of the Department of the Interior (October 2013)
- IM OR-2009-038 Modification of Guidance Found in the Greater Sage-Grouse Conservation Assessment and Strategy for Oregon: A Plan to Maintain and Enhance Populations and Habitat (Oregon State Strategy) (June 2009)
- IM 2010-022 Managing Structures for the Safety of Sage-grouse, Sharp-tailed grouse, and Lesser Prairie chicken (December 2009)
- IM 2010-71 Gunnison and Greater Sage-grouse Management Considerations for Energy Development (March 2010)
- IM 2010-110 Memorandum of Understanding Between the Bureau of Land Management and the U.S. Fish and Wildlife Service to Promote Conservation of Migratory Birds (August 2010)
- IM 2012-039 Identification and Uniform Mapping of Wildlife Corridors and Crucial Habitat Pursuant to a Memorandum of Understanding with the Western Governors Association (December 2011)
- IM 2012-043 Greater Sage-Grouse Interim Management Policies and Procedures (December 2011)
- IM 2012-044 BLM National Greater Sage-Grouse Land Use Planning Strategy (December 2011)
- IB 2012-058 The Bureau of Land Management's Landscape Approach for Managing the Public Lands (April 2012)
- IM 2013-083 Use of Regional Assessments (February 2013)
- IM 2013-111 The National Vegetation Classification and Associated Mapping Standards for Bureau of Land Management Planning Documents and Assignment of State-level Vegetation Classification Data Stewards (April 2013)
- IM 2013-119 Review of the Bureau of Land Management Strategic Plan for Migratory Bird Conservation (April 2013)
- IM 2013-142 Interim Policy, *Draft – Regional Mitigation Manual Section – 1794* (June 2013)
- IM 2013-166 The Bureau of Land Management Stewardship of the National Hydrography Dataset and the Watershed Boundary Dataset (July 2013)
- IB ID-2013-023 Interim Framework for Evaluating Proposed Activities Within Greater Sage-Grouse (GSG) Preliminary Priority and Preliminary General Habitats on Bureau of Land Management (BLM) Land in Idaho (July 2013)
- IM 2014-050 Review of Draft Instruction Memorandum on Bald and Golden Eagle Protection Act-Take Permit Guidance for Renewable Energy (February 2014)
- Baker Resource Management Plan/Environmental Impact Statement (BLM 1986) and Record of Decision (BLM 1989)
- Owyhee Resource Management Plan/Environmental Impact Statement and Record of Decision (BLM 1999)

- Southeastern Oregon Resource Management Plan/Final Environmental Impact Statement (BLM 2001) and Record of Decision (BLM 2002)
- Manual 6840 – Special Status Species Management (BLM 2008)
- Birds of Conservation Concern December 2008 (USFWS 2008)
- 50 CFR Part 17, Endangered and Threatened Wildlife and Plants; 12-Month Findings for Petitions to List the Greater Sage-Grouse (*Centrocercus urophasianus*) as Threatened or Endangered (2010)
- Summary of science, activities, programs, and policies that influence the rangewide conservation of Greater Sage-Grouse Open-File Report 2013-1098 (USGS 2013)
- USFWS Greater Sage-grouse Conservation Objectives: Final Report (USFWS 2013)
- A Strategy for Improving the Mitigation Policies and Practices of The Department of the Interior (US DOI 2014)

State of Oregon

- ODFW Greater Sage-Grouse Conservation Assessment and Strategy for Oregon: A Plan to Maintain and Enhance Populations and Habitat (Hagen 2011)
- ODFW Oregon Conservation Strategy (ODFW 2006)

State of Idaho

- Conservation Plan for the Greater Sage-grouse in Idaho (Idaho Sage-grouse Advisory Committee 2006)

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APPENDIX C: DEFINITIONS

Additionality: A property of a biodiversity offset, where the conservation outcomes it delivers are demonstrably new and additional and would not have resulted without the offset.

Avoidance: Avoiding the impact altogether by not taking a certain action or parts of an action (40 CFR 1508.20) (e.g. may also include avoiding the impact by moving the proposed action to a different time or location).

Baseline: The pre-existing condition of a defined area of habitat that can be quantified by an appropriate metric to determine level of function or value and re-measured at a later time to determine if the same area of habitat has increased, decreased, or maintained the same level of function or value.

Compensatory mitigation: Compensating for the impact by replacing or providing substitute resources or environments (40 CFR 1508.20).

Durability: Biological effectiveness (i.e., ecological durability) accompanied by legal and financial assurances that secure and protect the conservation status of the mitigation site and credits for at least as long as associated impacts persist (i.e., protective durability).

Ecological durability: Benefits from compensatory mitigation projects on compensatory mitigation sites persisting and influencing the landscape for as long as or longer than the projected impacts will negatively affect impacted fish and wildlife species.

In-kind mitigation: In-kind mitigation is the replacement or substitution of resources or values that are of the same type and kind as those impacted (e.g. winter habitat is lost, and winter habitat is enhanced or conserved).

Minimization: Minimizing impacts by limiting the degree or magnitude of the action and its implementation (40 CFR 1508.20).

Out-of-kind mitigation: Out-of-kind is the replacement or substitution of resources or values that are not the same type and kind as those impacted, but are related or similar. (e.g. winter habitat is lost, but new breeding habitat is enhanced or conserved.)

Protective durability: Protection of compensatory mitigation sites from future and conflicting land-uses or disturbances for as long as or longer than the projected impacts will negatively affect impacted fish and wildlife species.

Ratio: The relationship between compensatory offset for, and impacts to, individuals of species or habitat for species.

Rectify: Rectifying the impact by repairing, rehabilitating, or restoring the affected environment (40 CFR 1508.20).

Reduce or Eliminate Over Time: Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action (40 CFR 1508.20).

Residual impact: Impacts from a land-use authorization that remain after applying avoidance, minimization, rectification, and reduction/elimination measures; also referred to as unavoidable impacts.

Reversals: Damage to functioning compensatory mitigation sites that may be caused by natural disturbances (e.g., unintentional reversal, such as wildfire) or anthropogenic disturbances (e.g., intentional reversal, such as development) which shorten the intended duration of compensatory mitigation.

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